GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

DRAFT Bacteria Equivalency Strategy for Using the Optimal Indicator Organisms for WQS and NPDES Permitting

Stakeholder meeting
December 14, 2021

DEVELOPMENT OF BACTERIA WQ STANDARDS

- Fecal coliform is a group of bacteria used by Georgia as an indicator of fecal contamination and gastrointestinal illness risk, following US EPA's initial recommendations developed in the 1970s.
- Since then, various technical studies have identified *E. coli* and enterococci as better indicators of gastrointestinal illness risk in fresh and salt waters, respectively.
- In November 2012, US EPA published updated national recommended water quality criteria for primary recreation waters to protect human health from bacteria during immersive water contact activities, such as swimming.



DEVELOPMENT OF BACTERIA WQ STANDARDS

- During the 2013 Triennial Review, Georgia adopted *E. coli* and enterococci as the pathogen indicators for water designated as recreation where primary contact recreational activities occur.
- During the 2016 Triennial Review, Georgia proposed adopting *E. coli* and enterococci as the pathogen indicators for fishing, coastal fishing, and drinking water to protect secondary contact recreators. US EPA did not act on this recommendation.

DEVELOPMENT OF BACTERIA WQ STANDARDS

- During the 2019 Triennial Review, Georgia re-proposed adopting *E. coli* and enterococci as pathogen indicators for fishing, coastal fishing, and drinking water. The *E. coli* and enterococci winter criteria were updated to better reflect that the water ingestion rate for secondary contact recreators is 2.1 times less than for primary contact recreators.
- The new criteria removed higher bacteria criteria for fecal coliform in the case where water quality and sanitary studies showed that fecal coliform from non-human sources exceeded the instream water quality standard.

Designated Use	#/100 mL		
	Recreation	Drinking Water*/ Fishing	Drinking Water*/ Fishing
Bacteria Indicator	Year Round	May-October	November-April
Fecal Coliform			
30-day Geomean	200	200*	1000*
Single Sample Maximum			4000*
E. coli			
30-day Geomean	126	126*	265*
STV	410	410*	861*
Entercococci			
30-day Geomean	35	35	74
STV	130	130	273

* Criteria that apply to waterbodies designated as drinking water.

WHERE ARE WE?

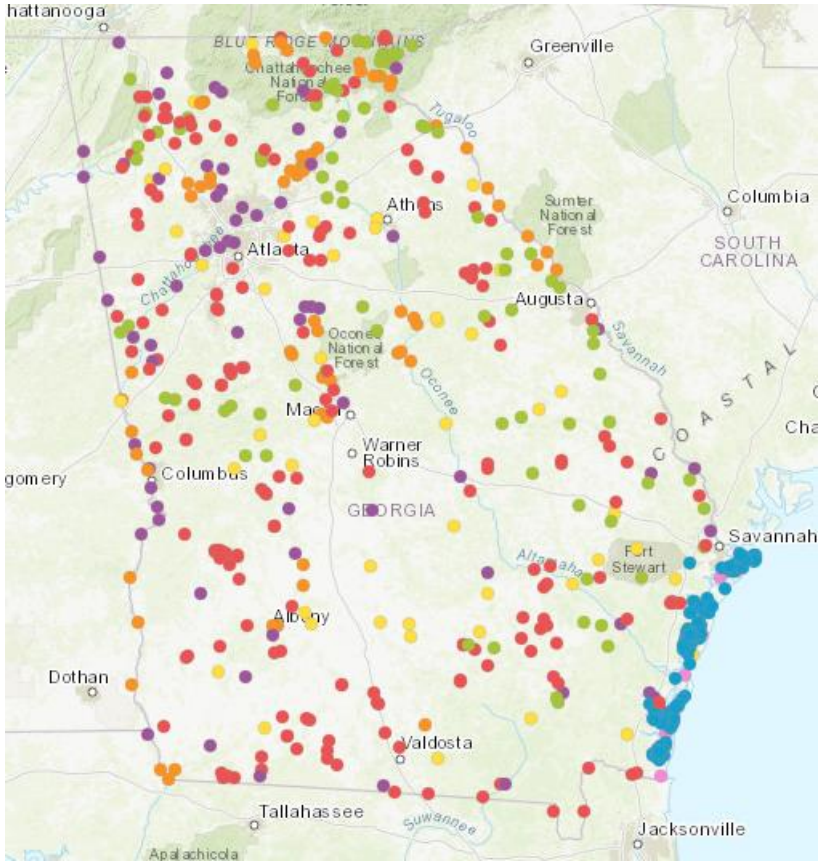
- 2019 Triennial Review
  - February 26, 2019 – Kickoff public hearing
  - Throughout 2021 – 7 different public and stakeholder meetings
  - October 26, 2021 – Brief the DNR Board Environmental Committee
  - October 27, 2021 – Public Notice
  - December 13, 2021 – Public Hearing for the proposed rule changes
  - **December 14, 2021 – Stakeholder meeting for draft Bacteria Strategy**
  - January 28, 2022 – Request DNR Board adoption of the proposed rule changes

WHAT IS THE PLAN FOR…

- Monitoring?
- TMDLs?
- Listings?
- NPDES permitting?
- The changes to the bacteria criteria have implications for all these areas. The draft Bacteria Strategy provides a plan for implementing the proposed criteria.

AMBIENT MONITORING TRANSITION - EPD

- Starting in 2022, EPD will start monitoring for *E. coli* and enterococci instead of fecal coliform at approximately 70 sites per year.
- EPD will prioritize segments that had been identified previously as impaired for fecal coliform.
- EPD will be prepared to include the most up-to-date information for the appropriate bacteria criteria for the 2024 305(b)/303(d) List and Integrated Report.
- Please note that waters within “shellfish growing areas” are not subject to the change to *E. coli*. CRD monitors these waters for fecal coliform contamination in accordance with FDA requirements.

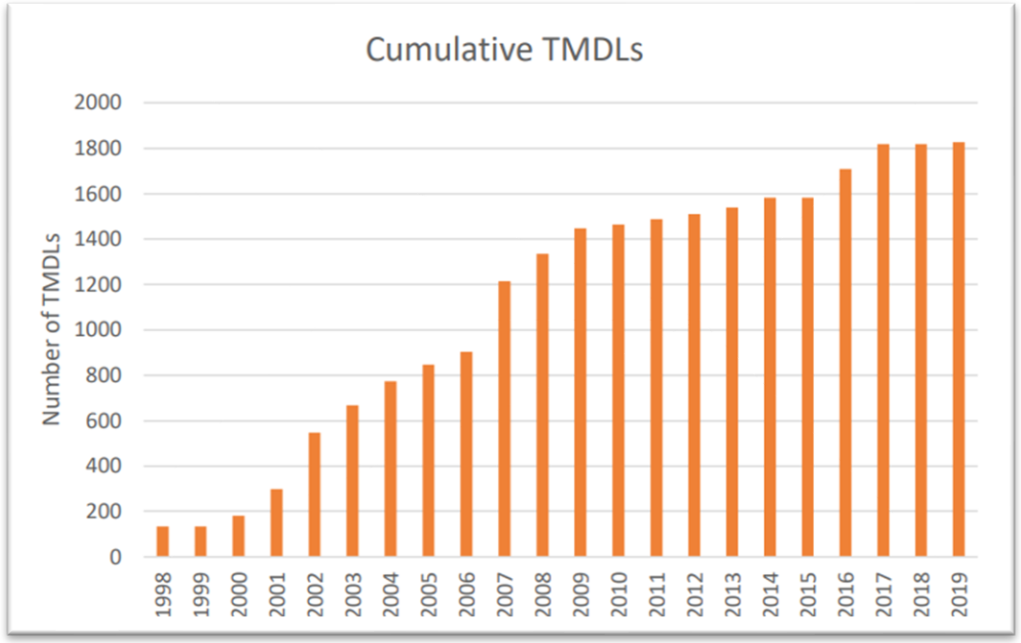


AMBIENT MONITORING TRANSITION - SQAPS

- Upon Board approval, EPD will contact stakeholders with approved SQAPs.
  - The fecal coliform data collected before the new criteria are approved by US EPA will be used for the 2024 305(b)/303(d) List.
  - Fecal coliform data must be submitted by June 30, 2023.
- After US EPA approves the new bacteria criteria, EPD will no longer use fecal coliform data for 305(b)/303(d) purposes, and the SQAPs will need to be revised.
- EPD will contact the SQAP stakeholders again to notify them of the approval and to remind them to submit a revision to their SQAP if they want their data to be used for 305(b)/303(d) assessment purposes.

TMDL UPDATES & IMPLEMENTATION

- Total Maximum Daily Loads (TMDLs) are developed for waters identified as not supporting their designated uses to determine the WLAs and LA that would allow the waterbody to meet water quality standards.
- EPD has developed fecal coliform TMDLs for more than 900 waterbodies.
- EPD plans to amend existing TMDLs with *E. coli* or enterococci-based allocations in addition to the original fecal coliform based allocations. The addendums will include WLA and LA for all bacteria indicators.
- The addendums will be public noticed and receive concurrence from US EPA before becoming effective.

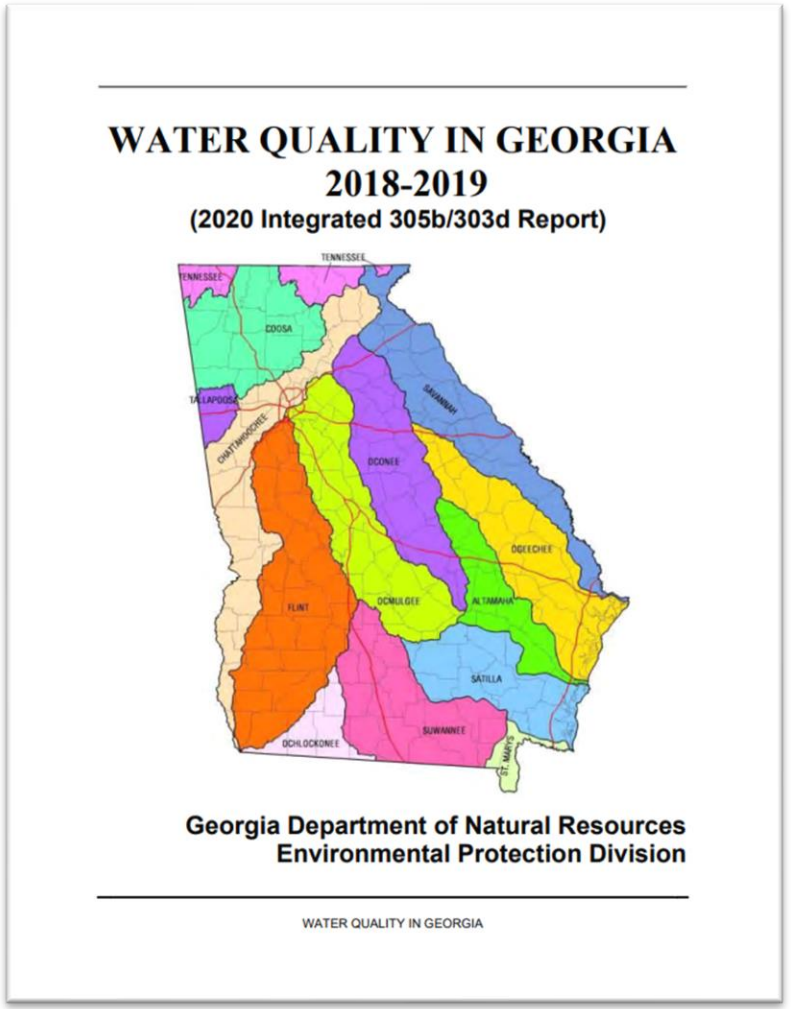


TMDL UPDATES & IMPLEMENTATION

- EPD is targeting December 31, 2022, for the development, public noticing, and US EPA concurrence of addendums for existing fecal coliform TMDLs.
- EPD is targeting September 30, 2023, for the development, public noticing, and US EPA approval of TMDLs for all waterbodies on the 2022 303(d) List for fecal coliform. These TMDLs will not have addendums, because they will be drafted to include limits for both fecal coliform and *E. coli* or enterococci.

305(b)/303(d) ASSESSMENT UPDATES & IMPLEMENTATION

- Every two years, EPD publishes an Integrated Report of water quality in Georgia, including the 305(b)/303(d) List. This list summarizes the status of every assessed waterbody as either supporting their designated uses, not supporting their designated use (impaired), or assessment pending.
  - The 303(d) List includes all waters that are not supporting their designated uses and need a TMDL.
  - The 305(b) List includes all waters that are supporting their designated uses, are assessment pending, or are impaired but have a TMDL developed.



305(b)/303(d) ASSESSMENT UPDATES & IMPLEMENTATION

- *E. coli* or enterococci monitoring will begin in 2022, except in shellfish growing areas designated by CRD.
- The 2022 303(d) List will include waters impaired for fecal coliform.
- The 2024 303(d) List will not include any waters impaired for fecal coliform, except for those in shellfish growing areas designated by CRD.
  - Waters will be listed as impaired for *E. coli* or enterococci.
  - Because TMDLs will have been developed for all waters impaired for fecal coliform, those waterbodies will be moved to the 305(b) List.
  - Impairments will be reassessed using new *E. coli* or enterococci data.

305(b)/303(d) ASSESSMENT UPDATES & IMPLEMENTATION

- **Why is EPD taking this approach?**
  - Based on a review of historical fecal coliform data, waterbodies impaired for fecal coliform were likely to also be impaired for *E. coli*.
  - EPD looked at 2019 and 2020 data where *E. coli* and fecal coliform samples were taken at the same time in the same location. EPD looked at 148 paired 30-day geomeans and found that approximately 85% of the time, the *E. coli* and fecal coliform geomeans either both met or both violated their criteria.
  - EPD will prioritize collecting *E. coli* or enterococci data to confirm impairment for waterbodies impaired for fecal coliform. If the results of the assessment indicate *E. coli* or enterococci are being met, then the waterbody will be identified as supporting its designated use.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- Once US EPA approves the new bacteria criteria, EPD will begin issuing permits with the new bacterial indicators.
- EPD does not plan to open and modify current permits to include *E. coli* or enterococci effluent limits, as they will be included at the time of permit reissuance.

Cover image from EPA's NPDES Permit Writers' Manual

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- EPD sets “end-of-pipe” effluent limits for bacteria.
- EPD reviewed all effective permits with fecal coliform limits.
- Approximately 80% have a fecal coliform AML of 200 #/100 mL and AWL of 400 #/100 mL. Upon permit reissuance, these permits will be given the following limits:

Facility type	Limit type	*E. coli*	Enterococci
Publicly-Operated Treatment Works (POTWs)	Average monthly limits*	126 #/100 mL	35 #/100 mL
	Average weekly limits	410 #/100 mL	130 #/100 mL
Non-POTWS	Average monthly limits*	126 #/100mL	35 #/100 mL
	Maximum daily limits	410 #/100mL	130 #/100mL

* Calculated as a 30-day geomean

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- Approximately 14% have fecal coliform AML of 23 #/100 mL, following the reuse requirements specified in EPD's 2002 *Discharges in the Metro Chattahoochee Basin* memo. These permits will receive an AML of 20 #/100 mL (geomean) for *E. coli*.
- Approximately 6% of permits have some other limits. These will be evaluated on a case-by-case basis.
  - A small number of facilities have seasonal limits. As permits are reissued with the new bacteria criteria, the seasonal limits will be removed.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Compliance**
  - EPD expects that facilities will utilize the same treatment technology for *E. coli* and enterococci as they did for fecal coliform. EPD can provide technical assistance in identifying an approved laboratory or appropriately collecting *E. coli* and enterococci samples.
- **Compliance schedules**
  - At the request of the permittee, a schedule to allow for the implementation of a WQBEL may be established by EPD and included in the permit. EPD will consider requests only for facilities that have never had a bacteria effluent limit in their permit before.
  - EPD believes that a 24-month compliance schedule is reasonable to upgrade a facility to include disinfection treatment.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **TMDL implementation in NPDES wastewater permits**
  - If an applicant discharges to a waterbody with a bacteria TMDL and/or the applicant reports bacteria as “believed present” on an application, has a sanitary waste stream, or if the facility is listed in the bacteria TMDL with a bacteria WLA, then the NPDES wastewater permit will be issued with monitoring and/or effluent limitations in accordance with the requirements of the applicable TMDL.
- **Federal ELG implementation in NPDES wastewater permits**
  - EPD will continue to implement federal Effluent Limit Guidelines (ELG) for Non-POTW permits. NPDES wastewater permits will be issued with the specific bacterial indicator identified in the ELG and the appropriate bacterial indicator for the designated use of the waterbody.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Mixing Zones**
  - EPD does not and will not approve mixing zones (allow dilution) in the development of permits limits for bacteria.
- **Sufficiently sensitive analytical test method**
  - A sufficiently sensitive analytical test method shall be used as required by 40 Code of Federal Regulations (CFR) Part 136 of the federal regulations and the detection limit shall be provided to EPD upon request.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Antidegradation considerations**
  - The replacement of the fecal coliform effluent limit with either *E. coli* or enterococci effluent limits is considered equivalently protective of the instream water quality fecal coliform criteria, so there is no expected increase in a permitted pollutant loading for bacteria, there will not be a discharge of a pollutant not currently being discharged, and there will not be an increase in the mass of a pollutant discharged triggering the need for a new effluent limitation.
  - EPD does not believe that the change in bacteria indicator will result in further degradation of the receiving water(s) or have any effect whatsoever regarding the protection of designated uses.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Anti-backsliding**
  - Changing the pathogen indicator and associated effluent limits in NPDES point source permits is not considered backsliding. The inclusion of *E. coli* and enterococci effluent limits simply use a different pathogen indicator to provide the same level of protection for the designated use of primary and secondary contact recreation as is currently required in Section 301(b)(1)(C) of the CWA and at 40 CFR 122.44(d).

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Watershed Protection Plans**
  - Certain permit holders are required to conduct a Watershed Assessment (WA) and develop and implement a Watershed Protection Plan (WPP). Monitoring for fecal coliform and *E. coli* or enterococci has been included in EPD guidance for the development of the WA and WPP documents since 2005.
  - When US EPA approves the proposed change in the pathogen bacterial indicators, EPD will revise the WA and WPP guidance documents to reflect the new bacteria indicators are the only bacteria parameters that should be sampled upon U.S. EPA approval.
  - EPD will notify permittees of US EPA's approval, that fecal coliform sampling under their WA or WPP may cease, and only *E. coli* or enterococci sampling is required.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Stormwater NPDES permits**
  - This discussion only applies to the municipal (MS4) permits and the industrial general permit. The construction stormwater general permits do not include bacteria-specific requirements.
  - As with the wastewater NPDES permits, EPD does not plan to open and modify current permits to include *E. coli* or enterococci.
  - EPD does plan to incorporate the new bacteria criteria, contingent on US EPA approval, in stormwater NPDES permits upon reissuance.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Industrial stormwater**
  - This permit expires at the end of May 2022. As part of the reissuance process, EPD is proposing modifications to the impaired waters requirements (Appendix C) to reflect the proposed change to the pathogen indicator.
  - Facilities that discharge to a stream segment listed as impaired or assessment pending for bacteria will be required to conduct sampling for the current pathogen indicator and assess their BMP performance against the applicable in-stream water quality standard to demonstrate that the discharge will not cause or contribute to an exceedance of a water quality standard.

NPDES PERMITTING TRANSITION & IMPLEMENTATION

- **Municipal stormwater**
  - Phase I Large MS4s: Includes bacteria monitoring requirements for those streams impaired for fecal coliform with qualifying MS4 discharges. Upon approval of the bacteria criteria by US EPA and notification by EPD, permittees will be expected to revise their Impaired Waters Plan and begin sampling for *E. coli,* according to current permit requirements.
  - Phase I Medium and Phase II Small MS4 permits will be revised upon reissuance to reflect the same bacteriological monitoring requirements as in the Phase I Large MS4 permits. EPD will solicit feedback during the permit reissuance process.

QUESTIONS OR COMMENTS

Contact us:

Anna (Ania) Truszczynski: anna.truszczynski@dnr.ga.gov; 470-384-7440

Elizabeth Booth: elizabeth.booth@dnr.ga.gov; 470-607-2439

Veronica Craw: veronica.craw@dnr.ga.gov; 470-938-3384

Audra Dickson: audra.dickson@dnr.ga.gov; 470-524-0726

Please send any questions or comments to anna.truszczynski@dnr.ga.gov or EPDComments@dnr.ga.gov. Please include “Bacteria Strategy” in the subject line to help ensure your comments get to the right person.